HND Engineering (General) Occupational Standard: Engineering Manufacturing Technician	
Department	University Studies
Awarding Body	Pearsons
Full-time Duration	1 Year
Part-time Duration	2 Years
Full-time Annual Fee	£6,360 per year full-time
Part-time Annual Fee	£3,180 per year part-time
Entry Requirements	Level 4 qualification in subjects aligned to the HND Units in General Engineering For example, HNC in General Engineering. For applicants who do not have the standard entry qualifications, we will consider individual applications on a case-by-case basis. Under Our Recognition of Prior Learning policy an applicants' previous learning and experience can be considered and they may be awarded certain qualifications or units of a qualification based on that learning or experience.
Study Location	University and Professional Development Centre, 73 Western Way, Bury St Edmunds UK
Subject to Validation*	No Qualifications are designed to meet the requirements of specific Occupational Standards. Meeting the requirements of the Occupational Standards relates to: • The knowledge, skills, and behaviours for identified job roles associated with the relevant Occupational Standards.
HECOS CODE	100202
Additional Potential Costs	Additionally, outside of course fees, there are some additional costs associated with the completion of the programme. A small amount £45 should be allowed for sundry items like calculators and drawing equipment

	Additional costs may include the purchase of core texts – we acknowledge individuals may prefer hard copy core texts for annotation and reference.
Narrative	Studying with us full time, two days a week; or part time, one day a week at the University and Professional Development Centre, you'll not only gain valuable knowledge but also the opportunity to acquire real work experience that can lead to employment with training for specific roles during the rest of the week. **Industry Connections:** We have strong connections with top employers in the Engineering sector. Our college is committed to helping you find suitable roles, ensuring you have the best chance to jumpstart your career.
Career Prospects	**Diverse Career Paths:** As a student on this course, the possibilities are endless. You can aspire to various rewarding careers in construction, including: • Career Paths may include: • Engineering Technician • Maintenance Engineer • Integration and Test Technician Project Manager **Path to Higher Education:** This course is your direct route to employment in the Engineering industry. But that's not all—upon completion, you will also have access to a BEng (Hons) Top Up Degree.
Unit Summary	**Research Project (5001)** This unit introduces students to the skills necessary to deliver a complex, independently conducted research project that fits within an engineering/ manufacturing context. On successful completion of this unit, students will be able to deliver a complex and independent research project in line with the original objectives, explain the critical thinking skills associated with solving engineering/manufacturing problems, consider multiple perspectives in reaching a balanced and justifiable conclusion, and communicate effectively a research project's outcome. Therefore, students

develop skills such as critical thinking, analysis, reasoning, interpretation, decision-making, information literacy, information and communication technology literacy, innovation, conflict resolution, creativity, collaboration, adaptability, and written and oral communication.

Professional Engineering Management (5002)

Engineers are professionals who can design, develop, manufacture, construct, operate, and maintain the physical infrastructure and content of the world we live in. They do this by using their academic knowledge and practical experience, in a safe, effective, and sustainable manner, even when faced with a high degree of technical complexity.

The aim of this unit is to provide you with the professional standards for engineers and to guide you on how to develop the range of employability skills needed by professional engineers.

On successful completion of this unit, you will be able to construct a coherent engineering services delivery plan to meet the requirements of a sector-specific organisation or business. You will display a personal commitment to professional standards and obligations to society, the engineering/manufacturing profession, and the environment

Advanced Mechanical Principles (5003)

A mechanical engineer is required to have an advanced knowledge of most of the machinery used within the engineering industry and should understand the physical laws that influence their operation. The aim of this unit is to continue covering the topics discussed in Unit 4008: Mechanical Principles and other higher-level topics such as: Poisson's Ratio and typical values of common materials; the relationship between the elastic constants such as Bulk Modulus, Modulus of Elasticity, Modulus of Rigidity; the relationship between bending moment, slope, and deflection in beams; calculating the slope and deflection for loaded beams using Macaulay's method; analysing the stresses in thin-walled pressure vessels; and stresses in thick-walled cylinders, flat and v-section belt drive theory. On successful completion of this unit students will be able to have more advanced knowledge of mechanical principles including behavioural characteristics of materials subjected to complex loading, the strength of loaded beams and pressurised vessels, specifications of power

transmission system elements, and operational constraints of dynamic systems.

Further Mathematics (5006)

The unit will prepare you to analyse and model engineering/manufacturing situations using mathematical techniques. Among the topics included in this unit are: number theory, complex numbers, matrix theory, linear equations, numerical integration, numerical differentiation, and graphical representations of curves for estimation within an engineering/manufacturing context. Finally, you will expand their knowledge of calculus to discover how to model and solve engineering/ manufacturing problems using first and second-order differential equations.

On successful completion of this unit, you will be able to use applications of number theory in practical engineering situations, solve systems of linear equations relevant to engineering/manufacturing applications using matrix methods, approximate solutions of contextualised examples with graphical and numerical methods, and review models of engineering and manufacturing systems using ordinary differential equations.

Industrial Systems (5012)

The speed and efficiency of many industrial processes is due, largely, to the control systems selected for the application and the engineer's ability to apply the most appropriate technology for their operation.

This unit presents a structured approach to the development of advanced electronic solutions in a range of modern industrial situations. An essential requirement here is the engineer's ability to utilise the most appropriate technology for each application, to ensure the most efficient monitoring and control of variables such as pressure, temperature, and speed. Among the topics included in this unit are techniques and applications of electrical and electronic engineering, as they apply to various branches of industry, such as component handling, controlling actuators, responding to change of circumstances in a process, or security issues of connected sensors and systems.

On successful completion of this unit, you will be able to learn about system elements and their overall characteristics, and analytically assess the accuracy and repeatability of a range of instruments.

Lean Manufacturing (5016)

Lean manufacturing is a systematic approach to minimising waste in a manufacturing system, by focusing on the activities that add the most value through the eyes of the customer. The basis of lean manufacturing originated in the car industry and was developed by Toyota in Japan. Lean is now used extensively worldwide, in all types and size of organisation, to improve international competitiveness. It is therefore crucial for manufacturing engineers to be able to design and operate manufacturing systems that employ lean successfully.

The aim of this unit is to introduce you to the principles and processes of lean manufacturing, so that you can become an effective and committed practitioner of lean in whatever industry sector you are employed in. To do this, the unit will explore the tools and techniques that are applied by organisations practicing lean.

On successful completion of this unit, you will be able to learn about the common principles of lean manufacturing. a range of the process improvement tools used within lean manufacturing, and effective communication skills to lead the process of continuous improvement across an organisation

Advanced Manufacturing (5017)

To meet changing customer expectations and gain competitive advantage, focus needs to be applied to developing smart factories and advanced manufacturing technologies. Manufacturing organisations will seek integration between manufacturing technology, high performance computing, the internet, and the product at all stages of its life cycle.

The unit will introduce Industry 4.0, the term that has been adopted to describe the ‘fourth’ industrial revolution currently underway, at present, in the manufacturing and commercial sectors of our society. It is a revolution based on the integration of cyber-physical systems with the Internet of Things and services. For the manufacturing sector, this integration has been enabled by successfully combining high performance computing, the internet and the development of advanced manufacturing technologies. Industry 4.0 is changing the way the world’s most successful companies produce the products that their global customers demand.

	On successful completion of this unit, you will be able to analyse the use of a range of advanced manufacturing technologies to improve the competitive advantage of the organisations adopting them; digitalisation trends in advanced manufacturing technologies; and develop your own research activities into the latest developments.
Staff Team	All lecturing staff are vocational specialists. Fully qualified with vast industry knowledge.
Assessment Methods	A variety of assessment methods are used which include written reports, written assignments, literature reviews, group presentations, and the compilation of project work.
Typical Module Diet All modules are 15 credits unless stated	Full Time and Part Time (P/T) Indicative Pattern of Delivery:

Unit Type	Unit Title (Numbers relate to Pearson Coding)	Period of Delivery
CORE Mandatory	Professional Engineering Management	Semester 1 **(Year 1 P/T)**
CORE Mandatory	Further Mathematics	Semester 1 **(Year 1 P/T)**
SPECIALIST Mandatory	Industrial Systems	Semester 1 **(Year 2 P/T)**
SPECIALIST Mandatory	Lean Manufacturing	Semester 1 **(Year 2 P/T)**
SPECIALIST Mandatory	Advanced Manufacturing Techniques	Semester 2 **(Year 1 P/T)**
SPECIALIST Mandatory	Research Project	Year Long **(Year 2 P/T)**
SPECIALIST Mandatory	Industrial Services	Semester 2 **(Year 2 P/T)**

Study Hours	**Study Hours per 15 credit Module: 150 hours** Lectures and Seminars: 45 hours Study and Assessment Support: 15 hours Assessments: 30 hours Preparation and Independent study: 60 hours

This programme is regulated by the Office for Students under the Quality Assurance Agency framework for UK Higher Education. Where studying may incur additional incidental or optional costs these are listed on the relevant course page on our website. Our Terms and Conditions, Admissions Policy (including baseline English language requirements) can be accessed via the University Studies website at https://www.universitystudies.wsc.ac.uk/policies